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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/754,572	01/12/2004	Mun-Pyo Hong	8071-121T (OPP031985US)	8242
7590 F. Chau & Associates, LLC 130 Woodbury Road Woodbury, NY 11797			EXAMINER BAUMAN, SCOTT E	
			ART UNIT 2815	PAPER NUMBER
			MAIL DATE 07/03/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/754,572

Applicant(s)

HONG ET AL.

Examiner

Scott E. Bauman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10, 14, 15, 45-51 and 54-58 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10, 14, 15, 45-51 and 54-58 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/751,840.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 21 March 2007 has been entered.

Specification

1. The amendment filed January 30, 2007 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: "wherein x is an integer, and can be the same or a different value for Al and Si, respectively".

The specification does not suggest anywhere that x is an integer, and can be the same or a different value for Al and Si, respectively. The applicant does not suggest anywhere in the specifications what X would be.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 10, 14, 15, 51, 54-58 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

4. Claims 10, 51, 55, and 57 disclose the use of Al_xSi_x . However, it is unclear whether this would be aluminum silicide (which has a chemical bond) or whether it is an alloy that contains aluminum and silicon (which has a physical bond). Appropriate clarification and/or correction are required.

5. Any claim not specifically addressed above, is being rejected as incorporating the deficiencies of a claim upon which it depends.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 45-47, and 49-50 are rejected under 35 U.S.C. 102(b) as being anticipated by Sung, United States Patent 5,978,058.

8. In re claim 45, Sung '058 discloses a gate wire (Fig 1, items 1 and 11) made of a first conductive material on an insulating substrate; a gate insulating layer (Fig 1, item 2) covering the gate wire (Fig 1, item 1);

a semiconductor layer (Fig 1, item 3) formed on the gate insulating layer (Fig 1, item 2);

a data wire (Fig 1, item 5) made of a second conductive material on the gate insulating layer (Fig 1, item 3) and the semiconductor layer (Fig 1, item 2);

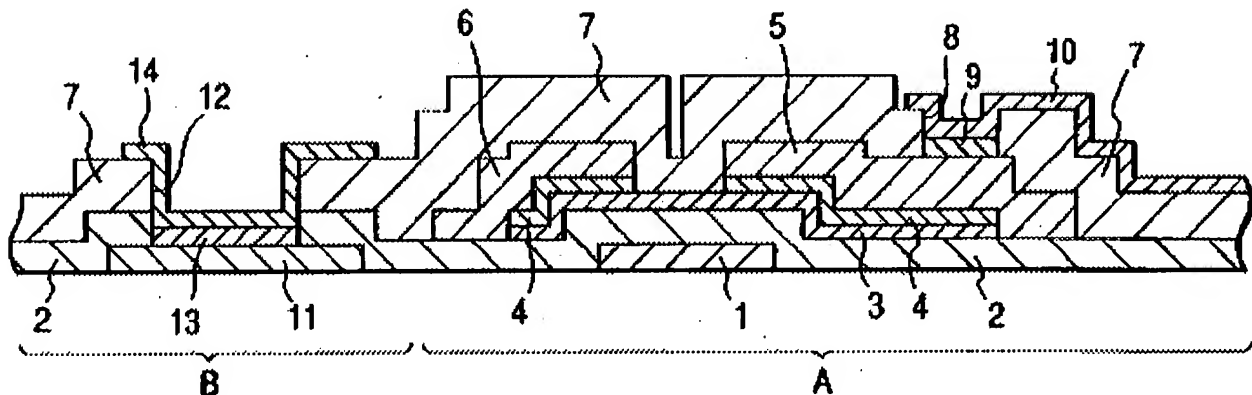
a passivation layer (Fig 1, item 7) covering the data wire (Fig 1, item 5);

an inter-layer reaction layer (Fig 1, items 13 and 9) formed on the gate wire (Fig 1, item 11) and the data wire (Fig 1, item 5);

and a transparent conductive layer pattern (Fig 1, items 14 and 10) electrically connected to the gate wire (Fig 1, item 11) or the data wire (Fig 1, item 5) through a contact hole (Fig 1, items 12 and 8) of the gate insulating layer (Fig 1, item 2) or the passivation layer (Fig 1, item 7), wherein the transparent conductive layer pattern (Fig 1,

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items 14 and 10) is electrically connected to the gate wire (Fig 1, item 11) or the data wire (Fig 1, item 5) via the inter-layer reaction layer (Fig 1, items 13 and 9).

FIG. 1

9. In re claim 46, Sung '058 discloses the first (Fig 1, items 1 and 11) and second (Fig 1, item 5) conductive material include a metal of aluminum-based material (Col 5, lines 34-35).

10. In re claim 47, Sung '058 discloses the insulating layer (Fig 1, item 2) and the passivation layer (Fig 1, item 7) are made of Silicon-nitride (Col 5, line 20).

11. In re claim 49, Sung '058 discloses the gate wire (Fig 1, item 11) includes a gate line, a gate electrode (Fig 1, item 1) connected to the gate line, and a gate pad which is connected to the gate line and receives a signal from an external circuit, and the data wire includes a data line, a source electrode (Fig 1, item 5) connected to the data line, a drain electrode (Fig 1, item 6) which is separated from the source electrode (Fig 1, item 5) and opposite to the source electrode (Fig 1, item 5) with respect to the gate electrode (Fig 1, item 1), and a data pad which is connected to the data line and receives a signal from an external circuit.

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In re Swinehart 169 USPQ 226 (CCPA)

There is nothing intrinsically wrong with defining something by what it does rather than by what it is; mere recitation of newly discovered function or property, inherently possessed by things in prior art, does not cause claim drawn to those things to distinguish over prior art. USPTO possesses authority to require applicant to prove that subject matter shown to be in prior art does not possess [receives a signal from a external circuit] characteristic applicant relies on.

12. In re claim 50, Sung '058 discloses the interlayer reaction layer (Fig 1, items 13 and 9) includes silicon (Col 4, line 58) or transition metal.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claim 48 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sung, United States Patent 5,978,058 as applied to claim 45 above, and further in view of Sasaki et al, United States Patent 6,444,296.

15. In re claim 48, Sung '058 discloses the limitations of claim 45 above.

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Sung '058 does not disclose the transparent conductive layer pattern is made of indium zinc oxide, but only discloses the transparent conductive layer pattern is made of Indium tin oxide.

However, Sasaki et al '296 discloses the transparent conductive layer pattern is made of indium zinc oxide (Col 2, lines 41-42).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have combined Sung '058 thin film transistor LCD with the indium zinc oxide as taught by Sasaki et al '296 because the electrical resistance value of the contact portion is not increased (Col 2, lines 36-37).

16. Claims 10, 14, 15, 51, 53-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sung, United States Patent 5,978,058 in view of Sasaki et al, United States Patent 6,444,296, and further in view of Shindo et al, United States Patent 5,181,132.

In re claim 10, Sung '058 discloses contact structure of a wire, comprising:

a wire (Fig 1, item 3) of a conductive material on a substrate (Fig), wherein the wire (Fig 1, item 3) is made of a conductive material including aluminum-based material (Col 5, lines 35-35);

an inter-layer reaction layer (Fig 1, item 13) formed on the wire (Fig 1, item 11);
and

a conductive layer directly (Fig 1, item 14) connected to the wire (Fig 1, item 11) via the inter-layer reaction layer (Fig 1, item 13).

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Sung '058 does not disclose the inter-layer reaction layer including at least Al_xSi_x or inter-metallic compound comprising Al, but does disclose the inter-layer reaction layer including a silicide.

However, Shindo et al '132 discloses the inter-layer reaction layer (Fig 16, item 71) including at least Al_xSi_x (Col 13, lines 60-62) or inter-metallic compound comprising Al (Col 13, lines 60-62).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have combined the TFT structure as disclosed by Sung '058 and Sasaki et al '296 with the aluminum-silicon as disclosed by Shindo et al '132 because this allows to form, on a substrate of a liquid crystal display panel of the electronic device, a spacer with satisfactory position control by the formation of a metal deposition film, principally composed of aluminum, of satisfactory planarity and durability on the wiring of the thin film device through the use of a selective CVD process.

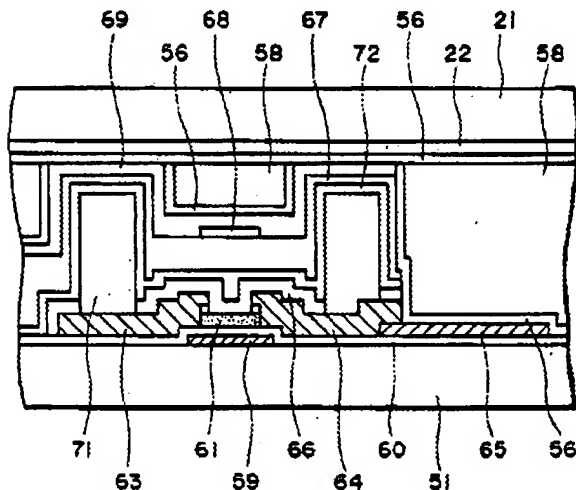


FIG. 16

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In re claim 14, Sung '058 discloses the conductive layer (Fig 1, item 14) is made of a transparent conductive material (Col 1, lines 19-20).

Sung '058 does not disclose the transparent conductive layer pattern is made of indium zinc oxide, but only discloses the transparent conductive layer pattern is made of Indium tin oxide.

However, Sasaki et al '296 discloses the transparent conductive layer pattern is made of indium zinc oxide (Col 2, lines 41-42).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have combined Sung '058 thin film transistor LCD with the indium zinc oxide as taught by Sasaki et al '296 because the electrical resistance value of the contact portion is not increased (Col 2, lines 36-37).

In re claim 15, Sung '058 discloses an insulating layer (Fig 1, item 2) having a contact hole (Fig 1, item 12) exposing the inter-layer reaction layer (Fig 1, item 3) between the wire (Fig 1, item 11) and the conductive layer (Fig 1, item 14).

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In re claim 51, Sung '056 discloses a first wire (Fig 1, item 5) formed of a conductive material, wherein the first wire (Fig 1, item 5) contains aluminum (Col 5, lines 34-35); and a second wire formed on and in contact with the first wire (Fig 1, item 5),

the second wire comprising: a first conductive layer (Fig 1, item 10) formed of a conductive material (Col 5, line 43); and a second conductive layer (Fig 1, item 9) sandwiched between the first wire (Fig 1, item 5) and the first conductive layer (Fig 1, item 10) and containing Al_xSi_x or inter-metallic compound comprising Al,

wherein the first conductive layer (Fig 1, item 10) is directly connected to the first wire (Fig 1, item 5) via the second conductive layer (Fig 1, item 9)

Sung '058 does not disclose the second conductive layer includes Al_xSi_x .

However, Shindo et al '132 discloses the second conductive layer (Fig 16, item 71) including at least Al_xSi_x (Col 13, lines 60-62) or inter-metallic compound comprising Al (Col 13, lines 60-62).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have combined the TFT structure as disclosed by Sung '058 and Sasaki et al '296 with the aluminum-silicon as disclosed by Shindo et al '132 because this allows to form, on a substrate of a liquid crystal display panel of the electronic device, a spacer with satisfactory position control by the formation of a metal deposition film, principally composed of aluminum, of satisfactory planarity and durability on the wiring of the thin film device through the use of a selective CVD process.

In re claim 54, Sung '058 discloses the first conductive layer (Fig 1, item 10) is made of a transparent conductive material (Col 1, lines 19-20; Col 5, line 43).

In re claim 55, Sung '058 discloses the inter-layer reaction layer (Fig 1, item 13) directly contacts the conductive layer (Fig 1, item 14).

Sung '058 does not disclose the inter-layer reaction layer includes Al_xSi_x , but does disclose the inter-layer includes a silicide.

However, Shindo et al '132 discloses the inter-layer reaction layer (Fig 16, item 71) including at least Al_xSi_x (Col 13, lines 60-62) or inter-metallic compound comprising Al (Col 13, lines 60-62).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have combined the TFT structure as disclosed by Sung '058 and Sasaki et al '296 with the aluminum-silicon as disclosed by Shindo et al '132 because this allows to form, on a substrate of a liquid crystal display panel of the electronic device, a spacer with satisfactory position control by the formation of a metal deposition

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film, principally composed of aluminum, of satisfactory planarity and durability on the wiring of the thin film device through the use of a selective CVD process.

17. In re claim 56, Sung '058 discloses the inter-layer reaction layer (Fig 1, item 13) is formed only on a portion of the wire (Fig 1, item 11) exposed through a contact hole (Fig 1, item 12).

18. In re claim 57, Jo '978 discloses the second conductive Layer (Fig 1, item 9) directly contacts the first conductive layer (Fig 1, item 10).

Jo '978 does not disclose the second conductive Layer includes Al_xSi_x , but does disclose the second conductive layer includes a silicide.

However, Shindo et al '132 discloses the second conductive layer (Fig 16, item 71) including at least Al_xSi_x (Col 13, lines 60-62) or inter-metallic compound comprising Al (Col 13, lines 60-62).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have combined the TFT structure as disclosed by Sung '058 and Sasaki et al '296 with the aluminum-silicon as disclosed by Shindo et al '132 because this allows to form, on a substrate of a liquid crystal display panel of the electronic device, a spacer with satisfactory position control by the formation of a metal deposition film, principally composed of aluminum, of satisfactory planarity and durability on the wiring of the thin film device through the use of a selective CVD process.

19. In re claim 58, Sung '058 discloses the second conductive layer (Fig 1, item 9) is formed only on a portion of the first wire (Fig 1, item 5) exposed through a contact hole (Fig 1, item 8).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Jo, United States Patent 6,461,978 discloses the device structure. Park et al, United States Patent 6,335,276 discloses the device structure. Dojo et al, United States Patent 6,528,357 discloses using aluminum alloy in liquid crystal display devices. Yamazaki et al, United States Patent 6,004,831 discloses using aluminum silicide and aluminum silicon in a TFT.

Response to Arguments

20. Applicant's arguments with respect to claims 10, 14-15, 45-51, and 54-58 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott E. Bauman whose telephone number is 571-270-1443. The examiner can normally be reached on M-TH 7:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Parker can be reached on 571-272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Scott Bauman
21 June 2007

A handwritten signature in black ink, appearing to be 'E. Lee', with a large loop at the end.

EUGENE LEE
PRIMARY EXAMINER